

# Best Management Practices for Wagyu Cattle

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# Advantages Unique to Wagyu Cattle

- **Meat quality**
- **Calving ease**
- **Temperament**
- Fertility
- High libido
- Longevity
- Adaptability
- Profit potential

# Challenges Unique to Wagyu Cattle:

- Lower milk yield
- Slower growth and FE
- Calf vigor and aggressiveness
- More similar to dairy breeds than beef breeds except for milk

**\*Wagyu cattle simply cannot be managed like other beef breeds in attempting to attain the unique advantages this breed offers\***



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**How can we best manage Wagyu cattle to capitalize on their unique strengths and to help overcome their weaknesses?**





**YOU SAY THERES MORE THAN  
ONE WAY TO SKIN A CAT?**



**START TALKING**

# Stress

## **\*\*Alleviating stress is the key to success with Wagyu cattle\*\***

- Stress provokes release of adrenalin and adrenalin in turn causes the body to convert fat in IMF cells into readily available energy (glycogen) for the muscles to burst into action, whether that energy is needed or not.
- Adrenaline drains IMF out of cells!
- Can take up to 8-12 weeks for cattle to recover and for stress hormone (cortisol) to return to normal depending on intensity and duration of stress incurred.
- Cattle remember stressful events
- The opportunity to regain any loss in marbling from stress depends on severity and when it occurs.
- Wagyu cattle are the most efficient at depositing IMF yet appear to be highly susceptible to losing it.....

# MATRIX<sup>®</sup> Cold Stress Study

**Objective:** To determine the effect of severe cold stress on marbling score in 71 Wagyu x Angus F1 heifers with and without Matrix.

<u>MATRIX</u>	<u>CONTROL</u>	<u>Carcass Parameter</u>
469 <sup>a</sup>	<b>406<sup>b</sup></b>	Marbling Score after blizzard-like weather
15.5		Marbling score, % increase
507	<b>460</b>	Pen mates marbling score 14d earlier
10.2		Marbling score, % increase
38	<b>54</b>	Marbling score, unit loss
7.5	<b>11.7</b>	Marbling score, % loss

a,b – means with different superscripts are significantly different at P<.053

- \* 40 day feeding trial with heifers (1300 and 1400 lbs)
- \* On feed for 423 days and harvested at approx. 22.5 months of age
- \* Exposed to blizzard-like conditions during the final 14 days pre-harvest (Mean temp 22°F with a low of 8°, mean wind speed 17mph with a high of 43 mph, rain and snow accumulation, no shelter)
- \* 80 pen mates (40 on each treatment) had been harvested 14 days earlier with avg. marbling scores of 507 (MATRIX) and 460 (CONTROL)
- \* Study conducted at A to Z Feeders Atlantic, Iowa

**Summary:** Severe cold stress was highly detrimental on marbling of Wagyu x Angus feedlot heifers with a resulting loss of 11.7% in marbling score (Control) and 7.5% (Matrix) during the final 14 days pre-harvest. Feeding Matrix in cold stress conditions prevented 36% of potential loss in marbling and resulted in an overall higher marbling score of 15.5% over the final 40 days pre-harvest (P<.053).



# **POTENTIAL SOURCES of STRESS**

**1 – Environment-Heat, Cold, Wind, Humidity, Precipitation, Mud**

**2 – Physical Discomfort - Pain**

**3 – Handling – Movements – Trucking**

**4 – Nutritional Stress-Abrupt changes in feed/ration, feeding times**

**5 – Fear/Fearful environment**

**6 – Weaning/Separation Anxiety/New Diet/New World**

**7 – Disease or injury**

**8 – Unfamiliar surroundings/Uncertainty**

**9 – Lack of a consistent routine**

**10 – Social stress/Competition**

**11 – Noise/Bright Lights**

**12 – Excitement/Running**

# Best Management Practices to help Mitigate Stress

- **Protection from harsh environment** - adequate shelter/structures
- **Low-stress handling** - docile cattle = docile handlers
- **Cattle mindset** - think like cattle, recognize stress triggers
- **Avoid sudden changes** - feed composition and delivery
- **Feed high-quality, properly balanced diets** - forage & water testing
- **Avoid overcrowding** - highly correlated w disease & injury
- **Minimize social stress** - social creatures, move in groups
- **Avoid bright lights and noise** – comfort = profit

**Wagyu cattle are not necessarily stressed more easily than other breeds, but they certainly have more to lose when stress occurs.**

# **Nutritional Management**

## **It all starts with mom!**

She takes care of herself, then the calf on the ground, then the calf to come.



# Dam Nutritional Priorities

- Maintenance
- Lactation
- Growth (to 4 years of age)
- Reproduction

# Factors to Consider in Feeding Wagyu Cows

- **Stage of production** (1<sup>st</sup> 90d and last 90d of preg critical)
- **Weather** (discomfort increases requirements)
- **Weight** (bigger cows=higher requirements)
- **Body condition** (aim for moderate condition 5-7)
- **Milk yield** (more feed=more milk and vice versa, Wagyu dams need help with milk yield (see Table))
- **Age** (1<sup>st</sup> calf heifers need more, group alone or with older cows)
- **Physical activity** (grazing large areas=higher requirements)



# Peak and Average Milk Production for Common Beef Breeds

<b>Breed</b>	<b>Peak milk lbs/day</b>	<b>Average milk lbs/day</b>
Angus	20.7	14.9
Charolais	21.6	15.1
Hereford	18.7	12.5
Limousin	20.9	14.1
Simmental	24.1	16.8
Avg.	21.2	14.7

Source: Meat Animal Research Center.

<b>Wagyu Cows</b>	<b>15.5</b>	<b>10.7</b>
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Source: Shingu, H. et.al., 2002; Shimada, K. et. al. 1988.

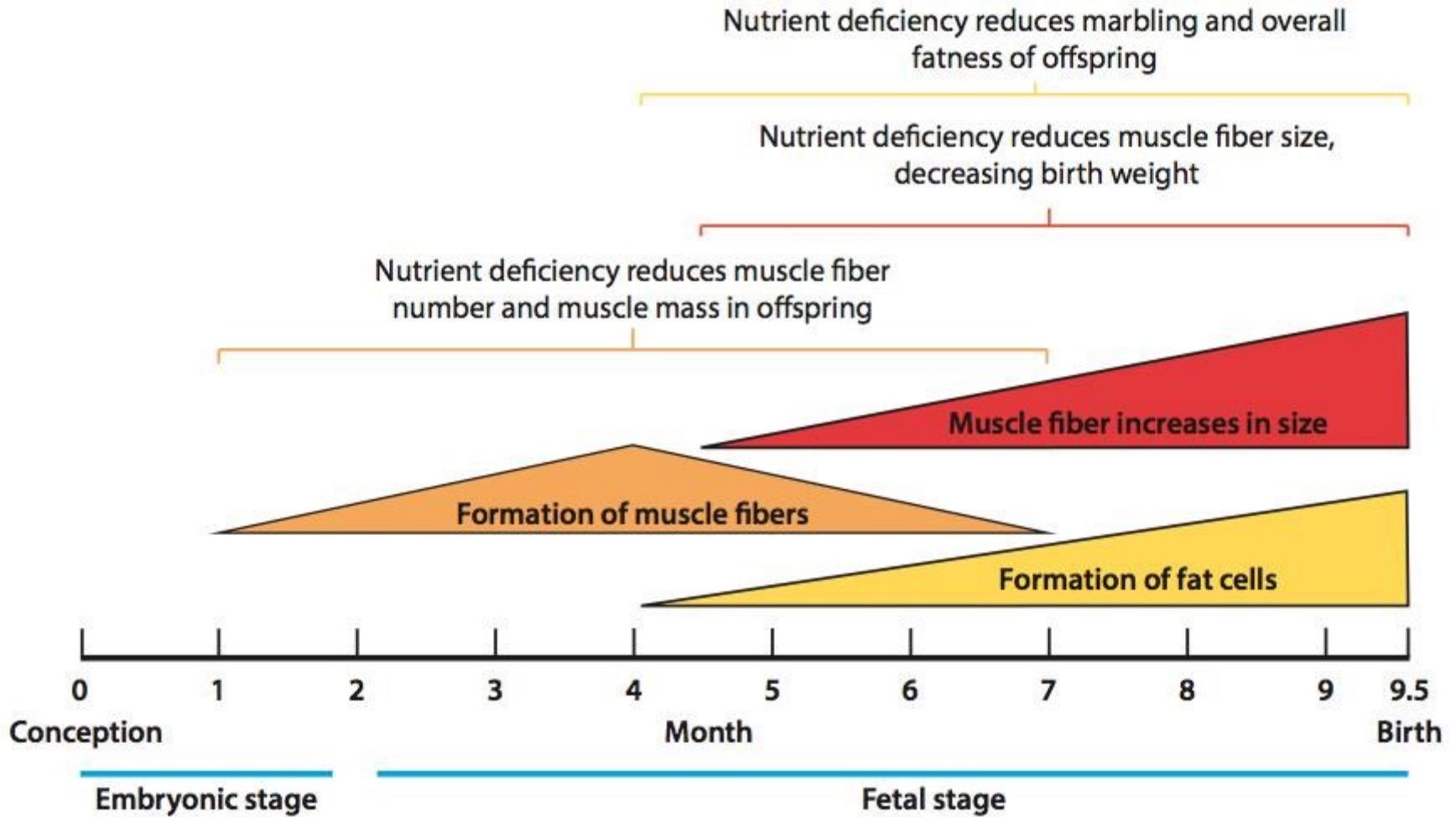
# Nutritional Considerations

- **Energy**-most limiting nutrient
- **Protein**-2<sup>nd</sup> most limiting nutrient, avoid NPN
- **Minerals & vitamins**-year round, near water
- **Water**-clean, fresh, easily accessible
- **Water quality**-test shallow wells and ponds
- **Forage testing**-required to balance rations and to determine mineral needs
- **Forage quality**- avoid “3 day hay” syndrome

# Fetal Programming

- Mid-late gestation crucial for fetal skeletal muscle development, no increase in no. of muscle fibers after birth.
- Fetal life is a major stage in development of IMF cells. These cells provide eventual sites for IMF accumulation/marbling formation.  
**\*late gestation critical for marbling\***
- Cow nutrition is directly related to fetal health which affects calf survivability and future growth.
- Colostrum quality is impacted by the last 5 weeks of gestation (BCS, stress, protein, mins/vits) and parity.

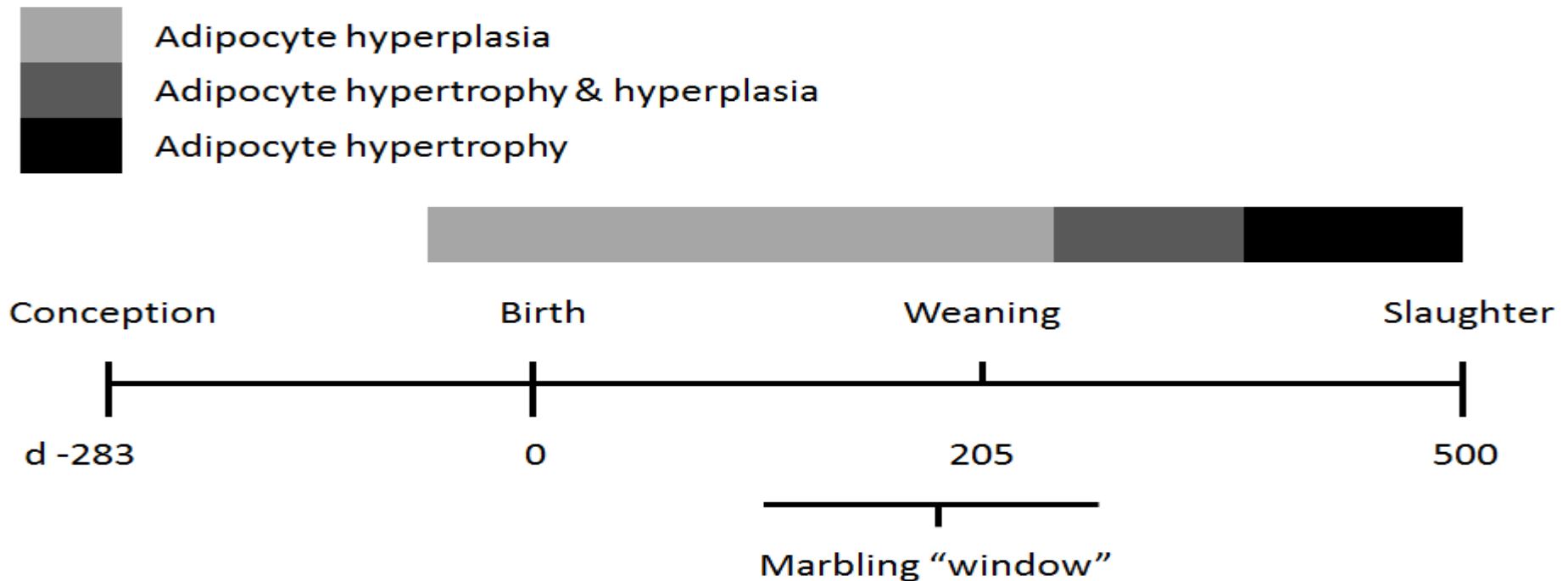
## Fetal Development Timeline



# Marbling matters as weaning time approaches

*Research shows weaning time has high impact on marbling (Ahola, CSU, 8/3/14)*

A 60-day window before and after weaning, fat cells undergo a transition from increasing in number to growing in size. Stress and management decisions can affect both number and size.



# The 5 C's of a Healthy Start

**Colostrum**

**Calories**

**Cleanliness**

**Comfort**

**Consistency**





- **Colostrum**-1<sup>st</sup> 12 hours critical, provide all calves from 1<sup>st</sup> calf heifers with colostrum supplement or replacer, vaccinate dam for E. coli pre-calving.
- **Calories**-focus on milk yield of dam via both genetics & nutrition, offer high quality creep/starter within 1<sup>st</sup> 3 days, early weaning = higher quality & heavier marbled carcasses.
- **Cleanliness**-clean, comfortable & dry calving conditions, good sanitation, fresh feed & water.
- **Comfort**-stress impacts efficiency, growth, reproduction & carcass quality more than any other single factor. Post-weaning stress must be minimized (CSU chart). Wagyu have more to lose when uncomfortable.
- **Consistency**-Most challenging of the 5 C's. Top producers in both the U.S. and Japan tend to be more uniform and consistent in their daily approach to husbandry than other operations.

# Feeding Young Stock

- Wagyu calves and nursing dams offered feed asap after birth
- High quality and highly palatable feeds
- Feed intake is best weaning criterion-rumen development
- Steers and replacement heifers should be separated after weaning
- High protein rations critical for heifer development  
(requirements more similar to dairy breeds)
- Avoid overfeeding & overconditioning replacement heifers
- Future finishing prospects must be pre-conditioned & taught to eat  
(min 1.5-2.0% of BW in grain consumption prior to finishing)
- Mineral program important as 1<sup>st</sup> limiting nutrient restricts growth and performance, immunity
- **Emphasize feeds with best results not best price**











# Heifer Management

- **Replacement heifers should attain 65-70% of their potential mature weight by the time they are bred at 14-15 months of age which means they should weigh 650-700 lbs at breeding.**
- **Plane of nutrition determines onset of puberty more than any other single factor.**
- **Setting weight targets and monitoring weights periodically is a good management practice.**
- **Avoid overconditioning. Protein and minerals build frame.**
- **1<sup>st</sup> calf heifers need preferential treatment in terms of nutrients for growth and gestation. Additional 0.5lb growth per day.**
- **Ideally, 1<sup>st</sup> calf heifers should be fed and managed separately from the mature cow herd.**
- **Provide first calf heifers extra attention at time of calving.**





# Finishing Phase 1

- Start calves on finishing program at 9-12 months of age (650-750 lbs)
- Calves should be pre-conditioned or adapted to Phase 1 finisher ration (10-18 months of age)
- Feed a good quality and palatable grass or small grain hay or haylage at 1% of BW
- Feed a nutritionally balanced, palatable finisher grain at 2% of BW
- Feed a TMR at 3% of BW

# Finishing Phase 2

- Move calves to Phase 2 Finisher at 18-20 months of age
- Feed a nutritionally balanced Phase 2 finisher grain at 2.0-2.25% Of BW
- Feed average quality grass or small grain hay or straw at 0.50-0.75% of BW. Hay must be 6 months old to minimize vitamin A intake. Avoid alfalfa hay during this phase.
- Harvest fullblood/high percentage calves at 24-28 mos. and F-1's at 21-24 mos. of age or around 1400-1500 lbs based primarily on feed intake or weight gain, not backfat nor strictly age.
- Avoid excessive ADG to maximize quality?





## Recommended Minimum Grain Nutrient Levels

<u>Nutrient</u>	<u>Starter</u>	<u>Grower</u>	<u>Finisher 1</u>	<u>Finisher 2</u>
<b>Crude Protein %</b>	<b>18</b>	<b>16</b>	<b>15</b>	<b>14</b>
<b>TDN %</b>	<b>72</b>	<b>74</b>	<b>75</b>	<b>76</b>
<b>NEg, Mcal/lb</b>	<b>.50</b>	<b>.52</b>	<b>.54</b>	<b>.56</b>
<b>IU Vit A per day</b>	<b>40,000</b>	<b>30,000</b>	<b>25,000</b>	<b>0</b>
<b>IU Vit E per day</b>	<b>150</b>	<b>300</b>	<b>500</b>	<b>1000</b>

**\*NOTE: Crude Protein and TDN need to be slightly higher for heifers fed out for beef as they are less efficient converting these nutrients to weight gain than steers.**

<u>Nutrient</u>	<u>Alfalfa Hay</u>	<u>Grass Hay</u>
<b>Dry Matter %</b>	<b>90</b>	<b>90</b>
<b>Crude Protein %</b>	<b>20</b>	<b>10</b>
<b>ADF %, max</b>	<b>30</b>	<b>45</b>
<b>NDF %, max</b>	<b>40</b>	<b>75</b>
<b>RFV</b>	<b>150</b>	<b>75</b>

# Marbling

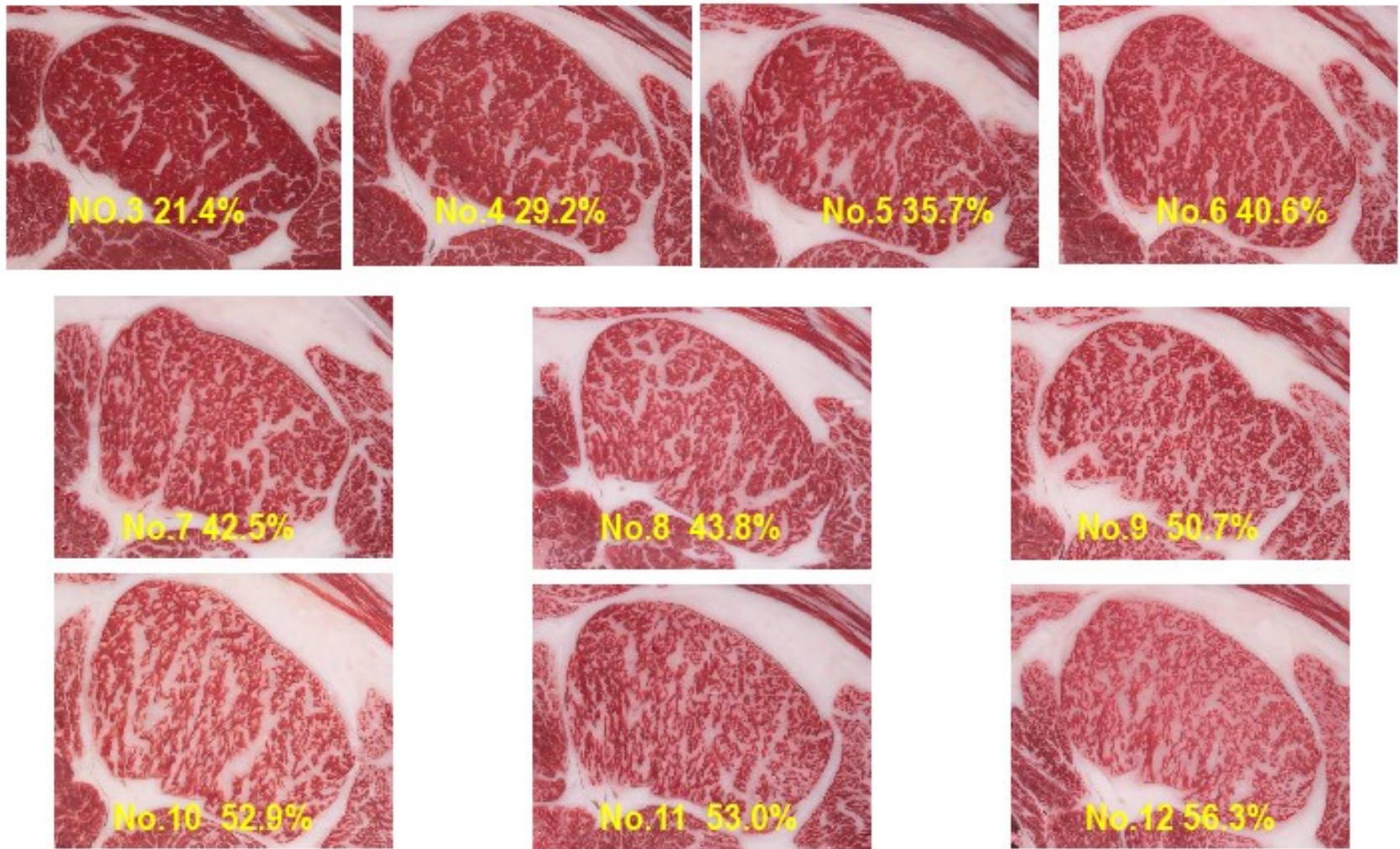
- Marbling is a lifelong process starting in-utero
- Several periods in which marbling accelerates:  
3-6 mos., 12-14 mos., again at 18-20 mos.
- Plane of nutrition and minimal stress are very critical during these times
- There is a point of diminishing returns in which IMF deposition is less than that of subcutaneous and internal fat (>1500 lbs & 30+ mos. in Japanese blacks)



# Vitamin A and Marbling

- Very common feeding practice of Japanese finishers is removal of vitamin A after 18 mos., restricted at 13-18 mos.
- Removal should occur no later than 23 mos.
- Studies in Japan (Hashimoto) and U.S. (Flaherty) have shown as much as 30% increase in marbling
- 3 out of 4 studies done since 2003 indicate vitamin A removal for min. of 90d pre-harvest improved quality grade significantly.
- Feeding vitamin A restricted diets requires good mgmt and should not exceed 10-12 mos.
- Avoid alfalfa and lush pasture during vitamin A devoid phase
- High levels of vitamin E help maintain immunity and also bind vitamin A by as much as 50% (Stuart et al.)

## New Beef Marbling Standard from 2008 - JMGA



Each marbling chip shows the **minimum IMF%** required to achieve each BMS number

# Summary

- Successful Wagyu operations recognize the breed's uniqueness and feed and manage them accordingly.
- Stress is the single biggest culprit impacting productivity and meat quality.
- It all starts with mom! Feed for good BCS and milk yield.
- Start your calves off right with the 5 C's: Colostrum, Calories, Cleanliness, Comfort, and Consistency.
- Give special care to replacement and 1<sup>st</sup> calf heifers.
- Pre-condition meat prospects prior to finishing.
- Variety of ways to enhance marbling ie. genetics, taking care of mom (last trimester critical), creep feeding, early weaning, properly-balanced diet, restricting vitamin A, adding vitamin E, use of vasodilators, minimizing stress.





